

c. a first imaging lens for collecting light scattered from said area, said first imaging lens forming a Fourier diffraction pattern of light scattered from said area illuminated,

A1 forced
d. a Fourier mask for blocking light in said Fourier diffraction pattern where the intensity is above a predetermined level indicative of background information and leaving in areas where the intensity is below said predetermined level indicative of particle information, the Fourier mask including a spatial light modulator (SLM) which is optically addressable and a polarization discriminator in the form of a polarizing beamsplitter,

e. a second camera,

f. a second imaging lens for imaging the Fourier diffraction pattern formed by the first imaging lens into the second camera, said second camera converting the image of the Fourier diffraction patterns into a stream of digital electrical signals,

g. a processor for processing the stream of digital electrical signals formed by the second camera,

h. a liquid crystal display (LCD) for converting the output of the processor into a video image, and

i. a third imaging lens for imaging the video image of the LCD onto the SLM,

j. said first camera recording the image of the area imaged by said first imaging lens using scattered light not blocked by said Fourier mask.

A2
4. (Amended) The apparatus of claim 1, wherein said laser produces a plane polarized beam of light.

12. (Amended) Apparatus for detecting particles on a surface of a semiconductor

wafer, said surface having repetitive patterns, the apparatus comprising:

a. a laser for illuminating an area on said surface with a beam of polarized light,

b. a first camera,

c. a first imaging lens for collecting light scattered from said area, said first imaging lens forming a Fourier diffraction pattern of light scattered from said area illuminated,

d. a Fourier mask for blocking light in said Fourier diffraction pattern where the intensity is above a predetermined level indicative of background information and leaving in areas where the intensity is below said predetermined level indicative of particle information, the Fourier mask including a spatial light modulator (SLM) which is electrically addressable and a polarization discriminator,

e. a second camera,

f. a imaging lens for imaging the Fourier diffraction pattern formed by the first imaging lens into the second camera, said second camera converting the image into a stream of digital electrical signals,

g. a processor for processing the stream of digital electrical signals formed by the second camera, and

h. an SLM controller for applying the output of the processor into the SLM,

i. said first camera recording an image of the area illuminated by said first imaging lens and not blocked by said Fourier mask.

14. (Amended) The apparatus of claim 13 and wherein said SLM is arranged for operation in a transmission mode.